REMARKS

Pending Claims:

In this application, claims 1-47 are currently pending. Claims 1, 5, 6, 10-12, 15-29, 43, 46, and 47 are amended by this Response. Claims 7-9, 14, and 36-38 were previously presented. Claims 2-4, 13, 30-35, and 39-42, 44, and 45 have not been altered since filing. Entry of these amendments is respectfully requested.

Amendments to the Specification:

Par. 40 (here paragraph numbers refer to the published application) has been amended to fix two typographical errors and to split a run-on sentence.

Par. 42 has been amended to fix reference numbers, referring to FIG. 2, that have the wrong first digit, such as 126 instead of 226.

Par. 46 has been amended to capitalize Fibre Channel for consistency with other usage, and to correct a reference number that has the wrong first digit (373 correct to 473).

Par. 56 has been amended to change the text of a sentence as follows: "If not 614, a determination is made of whether a connection is added or removed from a [[Fiber]]Fibre Channel Fabric 620. Addition of the words "is made" is consistent with FIG. 6, which the text describes. "Fibre Channel" is the correct terminology, and is what is used elsewhere in the application.

Par. 59 has been amended to remove the phrase "or carrier" in response to a claim rejection based on 35 U.S.C. §101, discussed below. Also, a verb has been changed to agree in number with the subject of a sentence.

Claim Rejections – 35 U.S.C. §101:

Claims 43-45 were rejected as containing non-statutory subject matter because the specification discloses an embodiment in which the process of the invention is tangibly embodied in a "computer-readable medium or carrier." The specification has been amended to remove the phrase "or carrier" from page 19, line 4 to fix this issue.

Claim Rejections – 35 U.S.C. §102:

Claims 1, 12, 13, 15, 26, 27, 29, 35, 41, 43, 46, and 47 were rejected under 35 U.S.C. §102(e) as being anticipated by Tan et al. (U.S. 2003/0126315), hereinafter *Tan*.

Claims 1, 12, 13

Claim 1 has also been amended from dealing with a "backup device" to a "storage device." The "verifying" step of Claim 1 has been amended in response to the rejection to state: "verifying *by a storage device* that the storage device has a path to a connection associated with the connection change." (emphasis added). *Tan* teaches using intelligent host bus adapters to provide "a data storage system that utilizes host-transparent or host-agnostic failover processes to monitor and control failover (and failback) of storage controllers and controller pathways." (par. 17) Each host requires a host bus adapter to utilize the *Tan* approach (Fig. 1). The Tan approach is significantly different from claim 1 as amended for reasons described in the following paragraphs related to (1) multiple host installations; (2) intrusiveness upon host systems and administration; and (3) detection of path availability from a storage device to other devices.

(1) Multiple Host Installations

Tan does not teach a storage device that has the capability to verify that it has a path to a connection associated with a connection change. In some environments, there may be a small number of storage devices, possibly even just one, serving a large number of hosts. With Tan's approach, each host is typically equipped with a printed circuit board (par. 20). Simply in terms of numbers of installations, this will be inefficient in some contexts compared to placing the verification logic in a storage device.

(2) Intrusiveness upon Host Systems and Administration

Tan favors an approach that is "transparent" to the host (abstract). But the requirement that a card be included in the host is necessarily more burdensome to the administrator of the host computer than having the verification step performed by the storage system. The card takes up space, and requires installation. The card must be

compatible with the hosts, possibly with a variety of architectures (e.g., servers, desktops, notebooks) that have require different types of card interfaces. Also, administrators and manufacturers of storage systems tend to be sophisticated technically, while owners and operators of host computers (e.g., PCs) will be, as a practical matter in most commercial settings, far more technically diverse.

(3) Detection of Path Availability from a Storage Device to Other Devices

The approach of *Tan* will detect path availability between a host and components of a storage system, such as a controller. It will not, in general, detect path availability between a storage device and other devices, such as (a) a storage system controller; (b) other storage system monitoring and management equipment; (c) another storage device; and (d) a host that is not equipped with a *Tan*-style host bus adapter. Failures of such connections can be important.

As amended, claim 1 should be allowable, as should the claims directly or indirectly dependent upon claim 1, in particular claims 12 and 13.

Claims 15, 26, 27

Claim 15 is an independent apparatus claim, which was rejected for reasons analogous to claim 1. Claim 15 has been amended to from a claim for a "device" to a claim for a "port adapter" comprising "a port ..." and "a processor ... for detecting a connection change in a Fibre Channel network and verifying the port has a path to a connection associated with the connection change, *wherein the port adapter is included in a storage device or in the Fibre Channel network.*" (emphasis added).

The reasons for allowance already presented with respect to claim 1 also apply if the port adapter is included a storage device. If, on the other hand, the port adapter is included in another device within the Fibre Channel network (which does not include the hosts), such as a management, monitoring, or control device, then the arguments made for claim 1 apply by analogy. For example, a given network device will want to access a set of other devices. The paths from the port in the network device to such other devices will be important, specific to that device or type of device, and distinct from the needs of hosts.

Claim 15 and the claims depending directly or indirectly upon claim 15, including claims 26 and 27, should now be in condition for allowance.

Claims 29, 35, and 41

Claim 29 has been amended to apply to "a local node *within a storage device.*" (emphasis added). Key language within the claim states, "wherein at least one of the local node and the Fibre Channel network includes ... a backup physical interface, wherein the backup physical interface further comprises: ... a processor ... configured for ... verifying the backup physical interface has a path to a connection associated with [a] connection change." Claim 29 should be allowable for the same reasons as claim 15. Claims depending upon claim 29 should also be allowable, particularly claims 35 and 41.

Claims 43, 46, and 47

Claims 43, 46, and 47 are independent claims for a program storage device, a device for providing a redundant Fibre Channel path, and a network, respectively. Each of these has been amended to require that the verification of a path to a connection associated with a connection change is done either within a storage device or within the Fibre Channel network. ." Claim 43, 46, and 47 should therefore be allowable for the same reasons as claim 15, as should the claims depending upon claim 43.
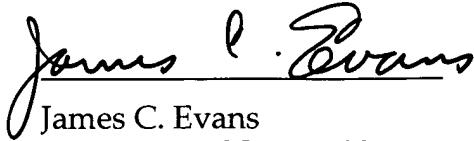
Claim Rejections – 35 U.S.C. §103:

The remaining claims, which are all dependent claims, were rejected as being obvious over *Tan*, either alone or in combination with Applicant's prior art. Since the claims upon which they depend are, as amended, in condition for allowance, these remaining claims should all be allowable.

CONCLUSION

All of the claims remaining in this application should now be seen to be in condition for allowance. The prompt issuance of a notice to that effect is solicited.

Respectfully submitted,

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